



ANALYSIS OF CAPITAL TO RISK ASSETS RATIO (CRAR) AND BASEL NORMS

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ABSTRACT

This paper revisits the implementation of Basel I, II, and III by the RBI in the Indian banks. The global financial crisis in 2007, the Basel Committee on Banking Supervision (BCBS) proposed specific reforms to strengthen global capital and liquidity regulations to promote a more resilient banking sector. India introduced Basel III norms in March 2019. The Basel III reforms have been proposed to be implemented from 1 January 2023 and will be spread over five years. The paper has three sections. Section I emphasizes the need for and determination of Capital Adequacy Ratio (CAR) with an example of 3 banks having a different capital base, deposits, loan/ advances, income, and expenses. Section II includes a comparison of Basel I, II, and III. Conclusions and suggestions are presented in Section III.

KEYWORDS: Capital Adequacy Ratio, Risk, Basel, Banks.

SECTION I

1.1 INTRODUCTION:

Basel is an international financial institution owned by Central Bank. It provides international monetary and financial cooperation. Basel was established in 1930 by an inter-governmental agreement between Germany, Belgium, France, the UK, Italy, Japan, the USA, and Switzerland. In February 1995, one person single-handedly bankrupted the bank founded in 1762; bearing bank was Britain's oldest merchant bank and Queen Elizabeth's bank. In 1996, BCBS introduced Market risk Basel I. In India, the first Narasimhan Committee Report recommended the introduction of capital to the risk-weighted assets system for banks in April 1992. In 1999 India adopted the Basel I guidelines and Basel II

1.2 OBJECTIVE OF STUDY:

- To study need for and determination of Capital Adequacy Ratio (CAR) with an example of 3 banks having a different capital base, deposits, loan/ advances, income, and expenses.
- To analyze and compare the provisions of Basel I, II, and III.

1.3 RESEARCH METHODOLOGY:

Secondary data are used to study the need for and determination of Capital Adequacy Ratio (CAR) with an example of 3 banks having a different capital base, deposits, loan/ advances, income, and expenses.

1.4 CAPITAL FUNDS OF BANKS:

Capital funds of banks are divided into two segments, i.e., Tier I capital and Tier II capital.ⁱⁱ The composition of these capital funds is as follows :

Composition of Tier I Capital:ⁱⁱⁱ

Elements of Tier I Capital

- Paid-up capital [ordinary shares], statutory reserves
- Perpetual Non-Cumulative Preference Shares [PNCPS]
- Innovative Perpetual Debt Instruments [IPDI]
- Capital Reserves representing surplus arising out of sale proceeds of assets.

Elements of Tier II Capital

- Undisclosed Reserves and other disclosed free reserves.
- Revaluation Reserves
- General Provisions and Los Reserves.
- Hybrid Debt Capital Instruments
- Subordinated Debt
- Investment Reserve Account

1.5 CAPITAL ADEQUACY RATIO^{iv}:

Capital to Risk Assets Ratio (CRAR), popularly called the Capital Adequacy ratio, is determined by dividing Total Capital by Total Risk-Weighted Assets. In the formula form:

$$\text{Capital Adequacy Ratio} = \frac{\text{Total Capital}}{\text{Total Risk-Weighted Assets}}^*$$

ⁱⁱRisk-weighted asset means the book value of an asset multiplied by the percentage of its weight allotted by the RBI. Risk-weighted assets are the assets of bank loans. Loans have specific risks. Some of the loans are low risk, like housing

loans, and some are very high risk, like education loans and vehicle loans. It depends on the risk that different weightage is given low risk, medium risk, and high risk. Banks are required to maintain a minimum Capital Adequacy Ratio (CRAR) of 9 percent on an ongoing basis. They are required to disclose the following information in the Notes to Accounts in this regard:

- Total Capital Adequacy Ratio
- Capital Adequacy Ratio-Tier I Capital.
- Capital Adequacy Ratio-Tier II Capital.
- Amount of subordinated debt raised as Tier II Capital.

Capital adequacy requirements safeguard the banks against the possibility of their failure and protect investors. It also strengthens market discipline.

Need and Determination of Capital Asset Ratio (CAR):

Banks were also advised to formulate and operationalize the Capital Adequacy Assessment Process (CAAP) required under Pillar II of Basel II. To ensure adequate capital with the banks measured by the capital adequacy ratio or capital. The focus of the norm was to ensure adequate capital, which is measured by capital adequacy or capital to risk-weighted asset ratio. Ratio or CAR or to ensure adequate capital with the banks is the object of the focus of these norms.

The bank's capital is invested money by owners or owner's equity or common equity. In India, CAR should be greater than or equal to 9%.

But as per Basel norms, it is 8%, but RBI is 9% for more security and safety.

let us take an example:

Assume Bank A has Rs 5 crore in tier 1 capital and Rs 3 crore in tier 2 capital. Banks invest all this amount and earn a considerable amount of interest. Bank A loaned Rs 5 crore to ABC Corporation, which has 25% riskiness, and Rs 70 crore to XYZ Corporation, which has 55% riskiness. Bank A has risk-weighted assets of Rs 39.75 crore (Rs 5 crore * 0.25 + Rs 70 crore * 0.55). It also has a capital of Rs. 8 crores (Rs 5 crore + Rs 3 crore). Its resulting total capital adequacy ratio is 20.12% (Rs 8 crore / Rs 39.75 crore * 100), and its Tier 1 ratio is 12.57% (Rs 5 crore / Rs 39.75 crore * 100). Similarly, the Bank B and Bank C calculate CAR and analyze that is necessary to maintain adequate capital to save the amount of depositor.

Case1: Bank have good times:-

Particulars(let)	(Bank A)	(Bank B)	(Bank C)
Tier1 capital	Rs. 5 crore	Rs. 2.3 crore	Rs. 2.05 crore
Tier II capital	Rs. 3 crore	Rs 0.7 crore	Rs. 0.70 crore
Total Capital	Rs. 8 crore	Rs. 3 crore	Rs. 3 crore
Deposit	100 crore	75 crore	50 crore
SLR and CRR (Let 25%)	25 crore	20 (approx.)	15 (approx.)
Amount available to loan	75 crore	55 crore	35 crore
Income from Loan(14% average)(A)	Rs. 10.50	Rs 7.70	Rs 4.90

Total Expenses (salary, infrastructure) (B)	Rs. 5.50 crore	Rs. 3.70 crore	Rs.3.50 crore
Net Income (A)-(B)	Rs. 5 crore	Rs. 4crore	Rs. 1.40 crore
Loan:(Category I), which has 25% riskiness,	5 crore	5 crore	5 crore
Loan:(Category II) , which has 55% riskiness,(More risky more interest income)	70 crore	50 crore	40 crore
Total Loan amount	75 crore	55 crore	45 crore
Risk weighted assets (loan amount of category I * 0.25 + loan amount of category II * 0.55).	Rs. 39.75 crore	Rs. 28.75 crore	Rs. 23.25 crore
CAR (TIER I CAPITAL+TIER II CAPITAL/ Risk weighted assets)	20.12%	10.4%	12.9%
Tier I = (Tier I capital / Risk weighted assets)	12.57%	8%	8.8%

All three above banks fulfill the BASEL II condition and RBI guidelines in CRAR.

Now, suppose, due to a bad market situation or pandemic, the bank cannot get the interest amount-the maximum amount of loss from the range of (0.70 to 3) crore. A bank is a limited liability company. The bank's liability is to the extent of their shareholding Liability, but the loss of Rs from (0.70 to 3) crore. This loss is to depositors. So to protect the depositor's bank has to maintain CAR or CRAR.

Case 2: Banks have not good times:-

Particulars(1et)	(Bank A)	(Bank B)	(Bank C)
Tier1 capital	Rs. 5 crore	Rs. 2.3 crore	Rs. 2.05 crore
Tier II capital	Rs. 3 crore	Rs. 0.7 crore	Rs. 0.70 crore
Total Capital	Rs. 8 crore	Rs. 3 crore	Rs. 3 crore
Deposit	100 crore	75 crore	50 crore
SLR and CRR(Let25%)	25 crore	20(approx.)	15(approx.)
Amount available to loan	75 crore	55 crore	35 crore
Income from Loan(14%average)(A)	Rs. 7.50 = (10.50-3.00)	Rs. 7.00 = (7.70-0.70)	Rs. 3.00 = (4.90-1.90)
Total Expenses (salary, infrastructure) (B)	Rs. 5.50 crore	Rs. 3.70 crore	Rs. 3.50 crore
Net Income/Loss (A)-(B)	Rs. 5 crore	Rs. 3.30 crore	(Rs. 0.50) crore
Loan:(Category I), which has 25% riskiness,	5 crore	5 crore	5 crore
Loan:(Category II) , which has 55% riskiness,(More risky more interest income)	70 crore	50 crore	40 crore
Total Loan amount	75 crore	55 crore	45 crore
Risk weighted assets (loan amount of category I * 0.25 + loan amount of category II * 0.55).	Rs. 39.75 crore	Rs. 28.75 crore	Rs. 23.25 crore
Total Capital (Tier I+Tier II), after loss in income	Rs. (8-3)= 5 crore	Rs. (3-0.70) =2.30 crore	Rs. (2.75-1.90) = 0.85 crore
CAR (TIER I CAPITAL+TIER II CAPITAL/ Risk weighted assets)	12.57%	8%	3.65%
Tier I = (Tier I capital) * / Risk weighted assets	3.125/39.75 = 7.86%	1.77/28.75 = 6.15%	0.64/23.25 =2.75%

* (Loss in interest income is proportionally reduced from the capital in the proportion of Tier I and Tier II). For *Bank A (Tier I capital-(5 crore-1.875 crore)=3.125 crore), Bank B Tier I capital=(2.30 crore-0.53 crore=1.77) and Bank C Tier I capital=(2.05 crore-1.41 =0.64)

In the case of Bank C, Due to defaulters results in a loss of defaulters' income or bank is in a difficult situation. Therefore CAR ensure adequate capital with the banks that are the object of the focus of these norms...As per RBI, 9% is the minimum CRAR

In case Bank C, after the loss of interest income the bank have Rs 0.85 crore

$$\text{Rs } 0.85 \text{ crore} = 3.65\%$$

$$= \text{Rs } 0.85 / 3.65\% * 9\% = \text{Rs } 2.09 \text{ crore}$$

Therefore, To maintain 9% CAR, bank C should maintain minimum total capital 2.09 crore as core capital/owners capital.

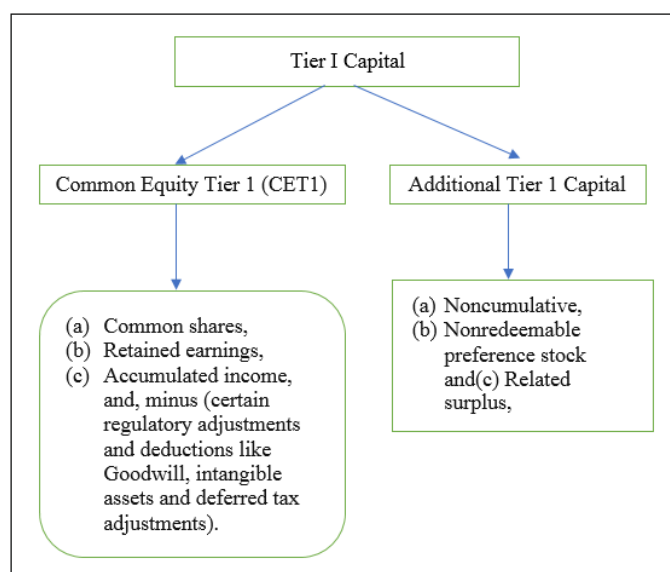
Similarly Bank B has to maintain the minimum / adequate capital=Rs 2.58 crore for 9% CAR.

SECTION II

2.1 BASEL-III:

The goal of Basel III norms is to remove the short comings of Basel I and Basel II to ensure transparency of the capital base of banks. Basel III introduced a Capital Conservation Buffer (CCB) and a Countercyclical Capital Buffer. As per Basel III, Tier 1 capital is divided in two parts: Common Equity Tier 1 (CET1) and Additional Tier 1 capital (AT1).

It is represented by table:



The contrast between Tier I and Tier II is that Tier I has two parts: CET I and AT I. CET I is a CORE CAPITAL that includes common shares and retained earnings capital and additional Tier I capital that may convert into equity at the time of crisis. It is also called a hybrid instrument. Tier II Capital is the subordinate capital of Tier I capital. It is another layer of reserve capital.

- In India, banks will maintain a minimum total capital (MTC) of 9% of total risk-weighted assets (RWAs), i.e., capital to risk-weighted assets (CRAR).
- Common Equity Tier 1 (CET1) capital must be at least 5.5% of risk-weighted assets (RWAs), i.e., for credit risk + market risk + operational risk on an ongoing basis.
- Tier 1 capital must be at least 7% of RWAs, and Additional Tier 1 (AT1) capital can be admitted for 1.5% of RWAs.
- Total Capital (Tier 1 Capital plus Tier 2 Capital) must be at least 9% of RWAs on an ongoing basis.

Banks must maintain the minimum Tier 1 and Tier 2 capital ratios at 9 percent. Furthermore, banks must maintain three types of buffer stock:

- First is a capital conservation buffer of 2.5 percent.
- Second, the bank should keep the counter-cyclical buffer at 0-2.5 percent.
- The third is the Leverage coverage ratio. The leverage rate must be at least 3%. The leverage rate is a bank's tier-1 capital ratio to an average of total consolidated assets.
- Basel-III established two liquidity ratios: LCR and NSFR.
- Liquidity coverage ratio (LCR) will require banks to maintain a buffer of high-quality liquid assets sufficient to deal with cash outflows encountered in an acute short-term stress scenario as specified by regulators.

- To avoid situations like "Bank Run." LCR ensures that banks have adequate liquidity to manage any situation if a 30-day stress scenario occurs.

A bank run occurs when many banks or other financial institution customers withdraw their deposits simultaneously over concerns about the bank's solvency. As more people withdraw their funds, the probability of default increases, prompting more people to withdraw their deposits:

- Net Stable Funds Rate (NSFR): Banks maintain a consistent funding profile regarding their off-balance-sheet assets and activities.
- The NSFR requires banks to fund their operations with stable funding sources (reliable over the one-year horizon).
- The NSFR must be at least 100 percent.
- As a result, LCR assesses short-term (30-day) resilience while NSFR assesses medium-term (1-year) resilience.

2.2 IMPLEMENTATION OF BASEL III IN INDIA:

India introduced Basel III norms in March 2019. Due to the pandemic period, the RBI decided to implement Basel III standards on January 2023.

Consequences of Basel III:

- Extending the period under Basel III results in a lower capital burden on banks regarding provisioning requirements, including NPAs.
- The cost of increasing capital ratios may cause banks to raise lending rates, resulting in a decrease in lending.

It will significantly impact the economy because it will lower investment, exports, and consumption.

The comparison of the Basel I, II and III are compiled in table as below:

Table IV

Particulars	BASEL I	BASEL II	BASEL III
Minimum CRAR as per BCBS	CRAR = 8%	CRAR = 8% TIER I = 4%	CRAR = 10.5% Tier 1 = 6%
Minimum CRAR as per RBI	CRAR = 9%	CRAR = 9% TIER I = 6%	CRAR = 11.5% Tier 1 = 6%
Assets Risk Classification	4 categories : 0%, 20%, 50%, 100%	4 categories : 0%, 20%, 50%, 100%	4 categories : 0%, 20%, 50%, 100%
Capital conservation Buffers to RWAs	None	None	2.50%
Leverage Ratio	None	None	3.00%
Counter cyclical Buffer	None	None	0% to 2.50% of common equity or other fully loss absorbing capital
Established / Proposed	1998	1999	2010
Implementation by	1992 (India 1993)	2006 (India 2008)	Jan 2023

2.3 CAPITAL CONSERVATION BUFFER [CCB]

CCB is introduced under the International Basel III norms. During boom times, banks must build a capital buffer that can be withdrawn when there is tightness. CCB ensures that banks build up a capital buffer outside periods of financial tension that can be withdrawn when banks face financial (systemic or idiosyncratic) problems. For this bank must have a definite plan to replenish the buffer and face capital distribution constraints.

Basel III prescribes the two ratios viz.

- (1) Liquidity Coverage Ratio (LCR) and
- (2) Net Stable Funding Ratio (NSFR)

It achieves two separate but complementary objectives.

2.4 LEVERAGE RATIO^{vii}:

The LCR promotes the short-term liquidity strength of banks. The leverage ratio is expressed in percentages.

Capital Measure

$$\text{Leverage Ratio} = \frac{\text{Capital Measure}}{\text{Exposure Meas}}$$

In India, RBI directed banks to average LR 3%-3.5%. In India, banks must hold liquid assets to maintain the Statutory Liquidity Ratio (SLR). Because liquid assets under SLR and LCR are primarily the same

2.5 NET STABLE FUNDING RATIO (NSFR)⁸:

Over long term period NSFR shall provide elasticity for banks. Banks will have to find more long term, reliable and permanent funds on regular basis. The NSFR is also called "Available Stable Funding" [ASF]. Banks must diversify their funding sources and reduce their dependency on short-term assets. The amount of Available Stable Funding [ASF] includes various assets held by that institution and those of its off-balance sheet (OBS) exposures.

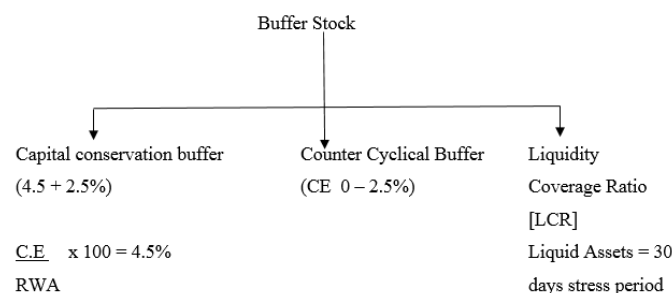
$$\text{NSFR} = \frac{(\text{Available Stable Funding}) [\text{ASF}] \geq 100\%}{\text{Required Stable Funding} [\text{RSF}]}$$

COUNTER CYCLICAL CAPITAL BUFFER (CCCB)^{viii}
[0% TO 2.5%]

Countercyclical Capital Buffer shall be required as a buffer of capital that banks should keep over and above the minimum capital requirements which will help to reduce the cyclical risk.

Countercyclical Capital Buffer (CCCB) fulfils two objectives. Firstly, banks make the buffer capital in the boom period, which may maintain the flow of credit under challenging times. Secondly, it achieves the broader goal of containing the reckless or high risk lending by the banks seeking ambitious growth.

The CCCB may maintain in the form of Common Equity Tier 1 (CET 1) capital or other fully loss-absorbing capital only. The portion of the CCCB may vary from 0 to 2.5% of the banks' total risk-weighted assets (RWA). As per the RBI, banks must hold CCCB at a boom time and may disclose the same. (attableDF-11 of Annex 1.8 as indicated in Basel III Master Circular)



SECTION III

3.1 CONCLUSION:

The study indicates that the coefficient of capital adequacy is positive and highly significant, with both the measures of profitability reflecting the sound financial condition of Indian banks. The differences between Basel 1, 2, and 3 accords due to their established objectives. However, all 3 are focussing on managing risk in light of the changing international business environments. The RBI has implemented these guidelines to bring bank regulation and compliance processes in line with those of other global banks, ensuring that Indian banks are in a solid position to absorb any financial risk.

3.2 SUGGESTIONS:

However, financial liberalization and fiscal control will not ensure stable economic growth and financial stability. Concrete steps still need to be taken. Due consideration has been given to diversification of ownership of banking institutions for greater market accountability and improved efficiency.

The public sector banks expanded their capital base by accessing the capital market, diluting government ownership. The RBI has issued guidelines on ownership and governance in private sector banks and emphasized diversified ownership.

Despite all this, the RBI has to go still far for disclosure practices. Banks should highlight "Change in Accounting Policy" and its impact on profit, and they should also disclose what prompted them to change an existing accounting policy under a distinct heading. Auditors are also required to play a more significant influential role in disclosure rather than remaining confined to the accounting aspect only. Investors place greater reliance on the role of auditors. Therefore, they must verify and comment on the compliance status with all regulatory measures.

Since the exact regulatory mechanism and standards govern banks, all banks must implement disclosure requirements uniformly. Banks' risk management needs to look at a much more comprehensive range of risks such as interest rate

risk, foreign exchange risk, liquidity risk, business cycle risk, strategic risk, etc. The risk management function helps identify, evaluate, monitor, manage, control, and mitigate risks. To improve the overall efficiency and maintain good profitability, enhance the bank's Human Resource(HR) practices and rotate Public Sector Banks(PSB) staff. Use Artificial Intelligence (AI) to supervise financial transactions to prevent financial fraud. On the other hand, a positive, significant leverage ratio and diversified portfolio are necessary to maintain future stability and reduce risk and uncertainty.

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